

## Depression and its Associated Factors among Older People Residing in Household Level of Chitwan District, Nepal

Shakuntala Chapagain<sup>1</sup>, Deena Khanal<sup>2</sup>, Binaya Paudel<sup>3</sup>, Isha Paudel<sup>4</sup>, Prajita Mali<sup>5</sup>, Gayatri Khanal<sup>6</sup>, Mamata Chhetri<sup>1</sup>

<sup>1</sup>Assistant Professor, Chitwan Medical College, School of Public health and community medicine

<sup>2</sup>Lecturer, Chitwan Medical College, School of Nursing

<sup>3</sup>Medical officer, Chitwan Hospital

<sup>4</sup>Medical officer, Chitwan Medical College

<sup>5</sup>Lecturer, Om health campus private limited

<sup>6</sup>Associate Professor, Chitwan Medical College, School of Public health and community medicine

**Corresponding Author:** Shakuntala Chapagain; Email: shakunchapagain53@gmail.com

### ABSTRACT


**Background:** Worldwide, with the rapidly growing elderly population, depression is becoming a major public health problem. This study aimed to find depression and its associated factors among older people.

**Method:** Community based cross-sectional study was conducted in Chitwan District. Multi-stage sampling technique was used. Out of 7, three Municipalities were selected by using a simple random sampling method. Wards from each selected Municipabilities were taken by using a simple random sampling method. Participants from each selected ward were taken conveniently. The sample size of the study was 318. Data were collected through face-to-face interviews using a semi-structured questionnaire. For assessing depression, a standard and scientific tool (Geriatric depression scale-15) was applied. Ethical approval was obtained from the Institutional Review Committee of Chitwan Medical College (Ref: CMC-I RCI07 6107 7 – 134). Data collection was done from December 16, 2020 to February 16, 2021. Data were analyzed by using descriptive and inferential statistics like frequency, percentage, chi-square and linear regression.

**Results:** Out of total of 318 selected older participants, nearly half (49.4%) had depression. Among total participants, 33 (10.38%), 18 (5.6%) and 106 (33.3%) had mild, moderate and severe depression respectively. Ethnicity ( $p=0.004$ ), Marital status ( $p<0.001$ ), education status ( $p=0.001$ ), occupation before 60 years of age ( $p=0.001$ ), individual income ( $p=0.001$ ), living arrangement ( $p=0.001$ ), family member behavior ( $p=0.001$ ), feeling of loneliness ( $p=0.001$ ) and functional capacity ( $p<0.001$ ) are found to be associated with depression.

**Conclusion:** Very high number of people suffered from depression and age, education, marital status, individual income, and occupation before 60 years of age has a profound relationship with depression.

**Keywords:** Depression, elderly, home, community

ARTICLE INFORMATION	Source of Support: Self	Conflict of Interest: None
Received: 12 Sep. 2021	Accepted: 20 April 2022	Published Online: 30 April 2022
<p><b>Copyright:</b> © 2022 by the author(s) in which author(s) are the sole owners of the copyright of the content published.</p> <p><b>Licensing:</b> The Journal follows open access publishing policy, and available free on the <a href="#">website of the Journal</a> and is distributed under the terms of the <a href="#">Creative Commons Attribution International License 4.0</a> under the CC-BY 4.0  license, and the author(s) retain the ownership of the copyrights and publishing rights without restrictions for their content and allow others to copy, use, print, share, modify, and distribute the content of the article even in commercial purpose as long as the original authors and the journal are properly cited.</p> <p><b>Disclaimer:</b> The statements, opinions, and data contained in this publication are solely those of the individual author(s) and contributor(s). Neither the publisher, editor nor reviewers are responsible for errors in the contents nor any consequences arising from the use of the information contained in it. The Journal, as well as publisher, remain neutral with regards to any jurisdictional claims in any published articles, their contents, and the institutional affiliations of the authors.</p>		

## BACKGROUND

Depression is a common mental disorder that presents with depressed mood, loss of interest, feelings of guilt, disturbed sleep or appetite, low energy and poor concentration.<sup>1</sup> Depression is a common illness worldwide, with more than 264 million people affected.<sup>2</sup>

Globally, the population is aging rapidly. Between 2015 and 2050, the proportion of the world's population over 60 years will nearly double, from 12% to 22%.<sup>3</sup> According to the 2011 census of Nepal, there were 12,78,880 elderly over 65 years old inhabitants.<sup>4</sup>

Depression is not a normal part of aging<sup>5</sup> but during this critical phase of life, older people may become victims of various mental problems like depression.<sup>4</sup> It is a common public health issue with the increasing life expectancy worldwide.<sup>5</sup>

In Nepal, various studies are conducted at geriatric home and hospital settings but the data related to a community setting is scarce.<sup>7-11, 13-14</sup> Thus, findings are not likely to be representative of the entire geriatric population of the country.

Widowhood; divorce, poverty, physical health problems, lack of social support, loneliness, functional disability are the significant factors that lead to depression.<sup>(3,4)</sup> The objective of this study was to find out the prevalence of depression and its associated factors among elderly people.

## METHODS

Community based cross sectional study was conducted in Chitwan district of Nepal. Multi stage sampling technique was used. 1<sup>st</sup> of all, three Municipabilities were selected by using simple random sampling (lottery) method and then eighteen wards from selected Municipabilities were also taken by simple random sampling method. Participants were taken conveniently from each selected ward. Sample size was calculated by using Cochran formula for infinite population ( $n = z^2pq/d^2$ )<sup>15</sup> where  $p = 0.25$ .<sup>16</sup> Total sample size was 318.

Older participants who were willing to participate were included in the study. Those who could not speak, hear, and understand the questions were excluded from the study. Face to face interview

technique was conducted using the Standard Geriatric depression scale (GDS)<sup>17</sup> and functional capacity was measured using 7 items instrumental activities of daily living (IADL) scale.<sup>12</sup> GDS-15 consists of 15 items that focus on psychological symptoms. A score of 0-4 is considered normal, 5-8 indicate mild depression, 9-11 indicate moderate depression and 12-15 indicate severe depression.<sup>17</sup>

Data were collected from December 16, 2020 to February 16, 2021. Ethical clearance was obtained from CMC-IRC (Ref: CMC-1 RC107 6107 7 – 134). Data were entered in Epi-data 3.1 and analysis was done in SPSS 20. Data were analyzed by using descriptive and inferential statistics like frequency, percentage, chi-square and linear regression.

## RESULTS

Out of 318 respondents, about 47.2% were of age group 60-70 years and 54.7% were female. Majority of respondents (61.6%) were Brahman, 93.7% were Hindu, and 64.2% were illiterate. Among literate, 51.8% had primary level education followed by 25.4% secondary and 22.8% bachelor and above. About 73.9% were farmers, 67.9% were currently married followed by 6.6%, 1.9% and 23.6% were single, separated and widow/widower respectively. More than half (67.3%) participants had income less than Rs 5000 per month. About 63.8% were living with their children and 71.7% of respondents did not use any substance of abuse. More than half (59.7%) had chronic disease.

About 58.2% participants had normal level of functional capacity, 80.2% had favorite activity and among them 54.5% favored to do household activities followed by gossiping (29.8%), meditation (11.8%), staying alone (3.9%). More than half (53.1%) had good relationship with their neighbors. About 50.6% participants felt lonely sometimes where as 19.5% most often but 29.9% never felt lonely. About 49.7% and 17.6% participants felt neglected by family member sometimes and most often respectively. About 63.52% got old age allowance, among them 81.2% were satisfied with it.

**Table1.** Depression among Elderly People (n=318)

Depression	Frequency	Percentage
Yes	157	49.4
No	161	50.6
<b>Level of depression</b>		
Mild (GDS: 5-8)	33	10.38
Moderate (GDS: 9-11)	18	5.67
Severe (GDS: 12-15)	106	33.3

Out of 318 participants, 157 (49.4%) had depression (mild 10.38%, moderate 5.67% and severe 33.3%). About half 137 (46%) participants from Hindu religion had depression. About 33.7% participants with primary and secondary level education had depression and none suffered from depression who had education bachelor or above. All participants who perceived life as sorrow had depression whereas who perceived life as struggle 35 (54.7%) and both 94 (41.6%) had depression. Regarding favorite activities, participants who favored household activities, gossiping, staying alone and meditation had depression 71 (51.1%), 29 (38.2%), 10 (100%) and 4 (13.3%) respectively. All participants who most often felt neglected by family had depression where as few 19 (18.3%) had depression who never felt neglects. About 54.5% participants had depression who had monthly family income less than Rs 25000. Regarding factors associated with depression, there was a significant association of

depression with ethnicity, marital status, education status, occupation before age of 60 years, individual income, living arrangement and family income. Participants who had personal income < Rs 5000 per month were 8 times more likely to have depression than those whose monthly income was above 5000. Similarly illiterate people were 4 times more likely to develop depression than literate ones.

Regarding factors associated with depression, there was a significant association of depression with ethnicity, marital status, education status, occupation before age of 60 years, individual income, living arrangement and family income. Participants who had personal income < Rs 5000 per month were 8 times more likely to have depression than those whose monthly income was above 5000. Similarly illiterate people were 4 times more likely to develop depression than literate ones.

**Table 2.** Association between Depression and Socio – demographic Factors

Characteristics of respondents	Depression		<i>p</i> -value ( $\chi^2$ test)	COR	95% confidence interval
	Yes (%)	No (%)			
<b>Age (years)</b>					
60- 75	100 (46.5)	115 (53.5)	0.088	1	0.889 – 2.284
More than and equal to 75	57 (55.3)	46 (44.7)		1.425	
<b>sex</b>					
Male	70 (48.6)	74 (51.4)	.822	1.057	0.680 - 1.644
Female	87 (50)	87 (50)		1	
<b>Ethnicity</b>					
Brahmin	84 (42.9)	112 (57.1)	.004	1	1.255 - 3.145
Others	73 (59.8)	49 (40.2)		1.986	
<b>Type of family</b>					
Nuclear	67 (50.8)	65 (49.2)	0.733	1	0.704 – 1.718

Joint/extended	90 (48.4)	96 (51.6)		1.099	
Marital status					
Currently married	91(42.1)	125 (57.9)	0.001	1	1.546 – 4.101
Single/widow, separated, divorce	66 (64.7)	36 (35.3)		2.518	
Education status					
Illiterate	126 (61.8)	78 (38.2)	0.001	4.325	2.623 – 7.130
Literate	31 (27.2)	83 (72.8)		1	
Occupation					
Agriculture/house worker	140 (56.5)	108(43.5)	0.001	4.580	2.450 – 8.564
Business/service	15 (22.1)	53 (77.9)		1	
Individual income					
Less than 5000	138 (64.5)	76 (35.5)	0.001	8.123	4.590 – 14.375
5000 and more	19 (18.3)	85 (81.7)		1	
Living arrangement					
Children/alone	121(56.3)	94 (43.7)	0.001	2.396	1.473– 3.897
Husband/wife	36 (35)	67 (65)		1	

COR: crude odd ratio

**Table 3.** Association between Depression and Predisposing Factors

Characteristics of respondents	Depression		p-value ( $\chi^2$ Test)	COR	95% confidence interval
	Yes (%)	No (%)			
Substance abuse					
Yes	50 (55.6)	40 (44.4)	0.173	1.414	0.866– 2.308
No	107 (46.9)	121(53.1)		1	
Chronic disease					
Yes	118 (62.1)	72 (37.9)	0.001	3.942	2.433– 6.387
No	37 (29.4)	89 (70.6)		1	
Family member behavior					
Satisfactory	64 (30.8)	144 (69.2)	0.001	1	6.79-22.32
Unsatisfactory	93 (84.5)	17 (15.5)		12.309	
Involvement in favorite activity					
Yes	114 (44.7)	141 (55.3)	0.001	1	1.48 - 4.77
No	43 (68.3)	20 (31.7)		2.659	
Social relationship					
Good	64 (37.9)	105 (62.1)	0.001	1	1.730 – 4.292
Satisfactory	93 (62.4)	56 (37.6)		2.725	
Feeling of loneliness					
Most often	51 (82.3)	11 (17.7)	0.001	18.545	8.14 – 42.23
Sometimes	87 (54)	74 (46)		4.703	2.61 – 8.49
Never	19 (20)	76 (80)		1	
Functional capacity					
Independent	51 (27.6)	134 (72.4)	0.001	1	6.06-17.55
Dependent	106 (79.7)	27 (20.3)		10.315	

COR: crude odd ratio

Participants who had chronic disease were almost four times (OR 3.942, CI 2.433 – 6.387) more likely to have depression than those without chronic disease. Similarly participants who had dependent functional capacity were 10 times (OR 10.315, CI 6.06 – 17.55) more likely to have depression than those who had normal functional capacity.

## DISCUSSION

Almost half (49.4%) of the participants suffered from depression. The finding was in line with the studies conducted in Bhairahawa, Rupandehi (49.4%),<sup>18</sup> Gokarneshwor, Kathmandu (49.2%),<sup>19</sup> and Kavre (53.1%).<sup>20</sup> This might be due to the similarity in study population. However this finding was higher than the finding of the study conducted in Ethiopia (41.8%)<sup>21</sup> and North India (40.7%).<sup>22</sup> This variation might be due to effective safety net program implementation for the older population in Ethiopia and speedy developmental process in North India. This finding is lower than the finding of Kathmandu valley 72.5%<sup>9</sup> and Vietnam (66.9%).<sup>23</sup> The variation with the study conducted in Kathmandu might be due busy schedule of family members in urban setting. The contradictory result with Vietnam might be due to geographical variation.

Regarding the level of depression, present study revealed that 10.38%, 5.67% and 33.3% had mild, moderate and severe depression respectively, which is in contrast with the finding of study done in Vietnam,<sup>23</sup> Kathmandu,<sup>9</sup> Bhairahawa<sup>18</sup> and North India.<sup>22</sup> Such a variation might be due to life threatening fear and anxiety, poor contact with family, friends and care givers and feeling of isolation because of Covid 19 pandemic.

This study found higher prevalence of depression among illiterate elder people. This might be due to less opportunity for engaging in better financial activities that caused low socio economic status and financially more insecure. This result is in line with the finding of the study done in Kavre<sup>20</sup> and Bhairahawa<sup>18</sup> Nepal.

Study revealed significant association ( $<0.001$ ) between depression and marital status. Elder who were single/widow/separated/ divorced found to be more likely to have depression in comparison

to currently married. This might be due to feeling of loneliness and lack of support. This result is similar with the study done in Ethiopia,<sup>21</sup> Kavre<sup>20</sup> and Bhairahawa.<sup>18</sup> However this finding is conflicting with the finding of study conducted in North India.<sup>22</sup>

This study found no significant association (0.088) between depression and age of participants which is similar with study done in Kathmandu valley,<sup>9</sup> Ethiopia,<sup>21</sup> North India<sup>22</sup> and Bhairahawa<sup>18</sup> but contrast with the finding of Vietnam.<sup>23</sup>

Study found no statistical significant association (0.822) between depression and sex which is similar with the finding of study done in western Nepal,<sup>24</sup> Kathmandu valley<sup>9</sup> and Vietnam.<sup>23</sup> Current study found that the significant association (0.004) between depression and ethnicity. This finding is in line with the finding of study done in Kathmandu Valley.<sup>9</sup> Brahmin were less (OR= 1.986, CI = 1.255-3.145) likely sufferer of depression than others.

This study revealed significant association ( $<0.001$ ) between depression and living arrangement. Elderly who lived with children found to be more likely to have depressed than those who lived husband wife together. This might be due to busy schedule of children and poor attention towards their parents. This finding is similar with the study done in Ethiopia.<sup>21</sup>

Study found that substance abuser are more likely (OR = 1.414, CI = 0.866 – 2.308) to have depression rather than those who had not habit of substance abuse. This finding is similar with the finding of study done in Kavre.<sup>20</sup>

There is significant association between depression and chronic disease. The higher odds (OR= 3.942) of having geriatric depression among those who had chronic disease. In chronic disease like diabetes, there can be a damage resulting from diabetic neuropathy or blocked blood vessel in the brain may contribute to the development of depression. This result is in line with other studies<sup>20, 23</sup>

Study found statistically significant association ( $<0.001$ ) between depression and individual income. Participants who had monthly income



less than 5000 were eight times more likely to be more depressed than those who had more than 5000 income per month.

This study revealed that significant association between depression and having any favorite activities. Elder who had lack of favorite activities were more likely (OR = 2.659) having depression. Engaging in favorite activities is helpful for psychological wellbeing. This finding is comparable with other literature.<sup>21</sup>

Current study found that depression was statistically associated (<0.001) with functional capacity for everyday living. Participants who were dependent had ten times more (OR = 10.315) likelihood of developing the depression than independent participants. This might be due to low self esteem related to dependency. Dependent people need more help in everything caused difficulty in daily living. This finding is in line with the finding of study done in Bhairahawa.<sup>18</sup>

Despite having some interesting results, this study is not free from limitations. In this study population was taken from a single district. In addition, detailed analysis were not done for other confounding variables. Furthermore, participants were selected

purposely so selection bias may be present. Inclusion of multi district population, analysis by considering the confounding variables and random Selection of study participants would increase the external validity of the study.

## CONCLUSION

This study revealed that near to half of participants suffered from depression. Participants who had feeling of loneliness, unsatisfied towards family member behavior, suffered from chronic diseases and dependent functional capacity were more at risk of having depression. The factors which are associated with elderly depression must be taken into consideration while formulating local health policy for older population. Furthermore, further study could be done to establish strong relationship between various factors and depression among older people

**Acknowledgments:** We would like to express our gratitude towards Lecturer Mr. Subash Koirala for his precious guidance on statistics as well as data analysis. We acknowledged all the study participants who kindly co-operate us during data collection.

## REFERENCES

1. WHO, "The world health report - Mental health: New understanding, new hope," available from: <http://www.who.int/whr/2001/en/>, (Fulltext)
2. James SL, Abate D, Abate KH, Abay SM, Abbafati C, Abbasi N, Abbastabar H, Abd-Allah F, Abdela J, Abdelalim A, Abdollahpour I. Global, regional, and national incidence, prevalence, and years lived with disability for 354 diseases and injuries for 195 countries and territories, 1990–2017: a systematic analysis for the Global Burden of Disease Study 2017. *The Lancet*. 2018 Nov 10;392(10159):1789–858. DOI:[https://doi.org/10.1016/S0140-6736\(18\)32279-7](https://doi.org/10.1016/S0140-6736(18)32279-7) (PubMed)
3. WHO, Fact sheets. Mental health of older adults. December, 2017. (Fulltext)
4. Punia S, Punia S, Singh CK, Balda S. Psycho-social status of senior citizen and related factors. *Journal of human ecology*. 2007 Nov 1;22(3):255–9. (Fulltext)
5. Hurley, K. *Depression in elderly: Not a Normal Part of Aging*. Psycom. January 2021 (Fulltext)
6. Chalise HN. Depression among elderly living in Briddashram (old age home). *Advances in Aging Research*. 2014 Feb 6;2014. 3:6–11. <http://dx.doi.org/10.4236/aar.2014.31002>. (Fulltext)
7. Pradhan SN. Depression in elderly. *J Psychiatic Assoc Nepal*. 2011.1(1):13–4. DOI: <http://dx.doi.org/10.3126/jpan.v1i1.9921> (Fulltext)
8. Ranjan S, Bhattarai A, Dutta M. Prevalence of depression among elderly people living in old age home in the capital city Kathmandu. *Health Renaissance*. 2013.11(3):213–8. DOI: <https://doi.org/10.3126/hren.v1i1.9634> (Fulltext)

9. Timalisina R, Sherpa PD, Dhakal DK. Factors Associated with Depression among Elderly Living in Old Age Homes in Kathmandu Valley. Journal of institute of medicine. 2014 Apr 1;36(1), ([Fulltext](#))
10. Khattri JB. Study of depression among geriatric population in Nepal. Nepal Med Coll J. 2006 Dec 1;8(4):220-3. ([PubMed](#))
11. Chalise HN, Rai SL. Prevalence and Correlates of Depression among Nepalese Rai Older Adults. Journal of Gerontology and Geriatric Research. 2013. 2(4):1–5. DOI: 10.4172/2167-7182.1000130. ([Fulltext](#))
12. Lawton MP, Brody EM. Assessment of older people: Self maintaining and Instrumental activities of daily living. The Gerontologist. 1969;9(3):179-18, ([PubMed](#))
13. Simkhada R, Wasti SP, Gc VS, Lee AC. Prevalence of depressive symptoms and its associated factors in older adults: a cross-sectional study in Kathmandu, Nepal. Aging & mental health. 2018 Jun 3;22(6):802-7. <https://doi.org/10.1080/13607863.2017.1310803>. ([PubMed](#))
14. Sharma KR, Yadav BK, Battachan M. Correlates of depression among elderly population residing in a community in Eastern Nepal. Birat Journal of Health Sciences. 2018 May 6;3(1):325-30. DOI: <https://doi.org/10.3126/bjhs.v3i1.19729> ([Fulltext](#))
15. Cochran, W.G. (1963) Sampling Technique. 2nd Edition, John Wiley and Sons Inc., New York. ([Fulltext](#))
16. Ghimire H, Pokharel PK, Shyangwa PM, Baral DD, Aryal A, Mishra AK. Are elderly people living in old-age home, less depressed than those of community? Findings from a comparative study. Journal of Chitwan Medical College. 2012;1(2):5-8. ([Fulltext](#))
17. Sherry AG. The Geriatric Depression Scale (GDS). revised 2019. ([Fulltext](#))
18. Subedi S, Shrestha P, Thapa DK. Study of depression in elderly: Prevalence and factors associated. Journal of Psychiatrists' Association of Nepal. 2018 Dec 31;7(2):16-23. <https://doi.org/10.3126/jpan.v7i2.24609> ([Fulltext](#))
19. Devkota R, Mishra K, Shrestha S. Loneliness and depression among older people living in a community of Nepal. Journal of Nepal Health Research Council. 2019 Aug 8;17(2):185-92. DOI <https://doi.org/10.33314/jnhrc.v0i0.1561> ([PubMed](#))
20. Manandhar K, Risal A, Shrestha O, Manandhar N, Kunwar D, Koju R, Holen A. Prevalence of geriatric depression in the Kavre district, Nepal: Findings from a cross sectional community survey. BMC psychiatry. 2019 Dec;19(1):1-9. DOI <https://doi.org/10.1186/s12888-019-2258-5> ([Fulltext](#))
21. Mirkena Y, Reta MM, Haile K, Nassir Z, Sisay MM. Prevalence of depression and associated factors among older adults at ambo town, Oromia region, Ethiopia. BMC psychiatry. 2018 Dec;18(1):1-7. DOI <https://doi.org/10.1186/s12888-018-1911-8>, ([Fulltext](#))
22. Sahni B, Bala K, Kumar T, Narangyal A. Prevalence and determinants of geriatric depression in North India: A cross-sectional study. Journal of Family Medicine and Primary Care. 2020 May;9(5):2332. DOI: [10.4103/jfmpe.jfmpe\\_357\\_20](https://doi.org/10.4103/jfmpe.jfmpe_357_20) ([PubMed](#))
23. Dao A, Nguyen VT, Nguyen HV, Nguyen LT. Factors associated with depression among the elderly living in urban Vietnam. BioMed research international. 2018 Nov 25;2018. DOI <https://doi.org/10.1155/2018/2370284> ([Fulltext](#))
24. Pokharel B, Sharma B. Depression and its associated risk factors among residents of a geriatric home in Western Nepal. Journal of Lumbini Medical College. 2019 Jun 26;7(1):24-8. DOI: <https://doi.org/10.22502/jlmc.v7i1.285> ([Fulltext](#))